

## THE OCCURRENCE OF A DIPROTODONTID MARSUPIAL REFERABLE TO *EUOWENIA GRATA* DE VIS IN WESTERN NEW SOUTH WALES

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### Summary

PLEDGE, N. S. (1989) The occurrence of a diprotodontid marsupial referable to *Euowenia grata* De Vis in western New South Wales. *Trans. R. Soc. S.Aust.* 113(3), 163-168, 30 November, 1989.

A complete last upper molar ( $M^3$ ) and fragments of several other teeth found in a bore on the Talyawalka Anabranche, east of Menindee, N.S.W., are identified as the Pliocene species *Euowenia grata* De Vis. *Euowenia grata* is redescribed and refigured, and the new  $M^3$  is compared with the equivalent teeth of *Diprotodon optatum*, *Zygomaturus trilobus*, *Meniscophus mawsoni*, *Nototherium mitchelli* and *Palorchestes azael*. The Talyawalka specimen extends the range of *Euowenia grata* by almost 1000 km and suggests a Pliocene age for the deposit.

KEY WORDS: diprotodontid marsupial, *Euowenia*, *Diprotodon*, *Zygomaturus*, *Meniscophus*, *Nototherium*, *Palorchestes*, Talyawalka, Menindee, New South Wales, Pliocene.

### Introduction

De Vis established the species *Owenia grata* (De Vis 1887), for a skull and jaws (Fig. 3, QM F519) found at Chinchilla, Queensland. Later he renamed it *Euowenia* (De Vis 1891) after finding the earlier name to be preoccupied by an annelid worm. At the same time, he named a second species, *Euowenia robusta*, for a set of dentaries found at Freestone Creek, near Warwick, Qld, in Pleistocene alluvium. Woods (1968) suggested that *Euowenia robusta* is a junior synonym of *Nototherium inerme* which could effectively restrict *Euowenia* to specimens from the Chinchilla Sand, and to a Pliocene age (Woods 1960; Bartholomai & Woods 1976).

*Euowenia grata* occurs with certainty only at Chinchilla (Stirton *et al.* 1968). M. Archer has informed me (pers. comm. 3.xi.1975): "In many cases, specimens should more honestly be referred to merely as undetermined small nototherines", and there is no evidence at present for any Pleistocene occurrence. Recently, *Euowenia* has been listed (Tedford, Williams & Wells 1986) in the Plio-Pleistocene Kanunka local fauna at Lake Kanunka, South Australia, but this record needs confirmation.

The purpose of this note is to record a new occurrence of the species well beyond its previously known locality.

### Material and Methods

In 1969, Mr D. Walker of Talyawalka Station east of Menindee, New South Wales, presented to the South Australian Museum some unusual tooth fragments found in the sludge from a newly-drilled water bore in "White Water Lake" (32°25'S,

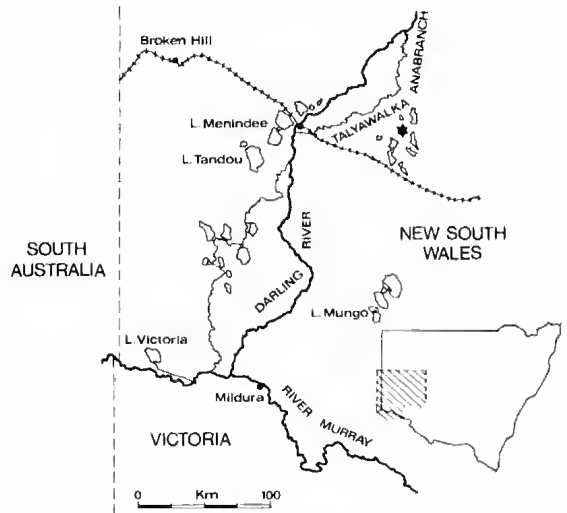
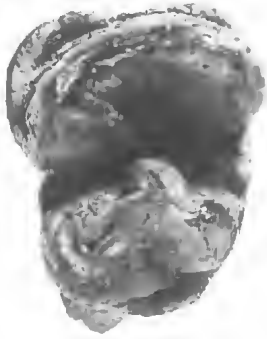


Fig. 1. Locality map. White Water Lake, Talyawalka Anabranche, New South Wales.

143°18'E) on the Talyawalka Anabranche of the Darling River (Fig. 1).

The new specimen is very fragmentary, comprising the complete left  $M^3$ , two enamel fragments with differing degrees of wear, believed to be anterobuccal corners of the protoloph of  $M^3$  and  $M^1$  of the same tooth row, the anterobuccal corner of the metaloph of  $M^1$ , the anterior half of  $M^3$ , an unidentifiable molar fragment and a fragment of incisor. Because of the poor quality of De Vis' figure (De Vis 1887), the new specimen was for several years considered by the author to be a possible very large new species of *Palorchestes*, because it had a fairly distinct midlink between the lophs. However, direct comparison with a cast of the upper dentition of *Euowenia grata* (holotype QM F519) by courtesy of Dr M. Archer, has now proven its identity. The specimen also has been

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**A**



**B**



**C**



compared with teeth or casts of *Diprotodon optatum*, *Zygomaturus trilobus*, *Meniscophus mawsoni*, *Nototherium mitchelli* and *Palorchestes azeul*.

Material is from the South Australian Museum, Adelaide (SAM), Queensland Museum, Brisbane (QM) and British Museum (Natural History), London (BMNH).

The status of the genus *Euowenia* is thought to be in doubt and in need of major revision (Archer & Wade 1976), but until this is done it is felt that a re-description of the species is desirable, based partly on this new material. Tooth notation follows Archer (1978).

### SYSTEMATICS

#### *Euowenia grata* De Vis FIGS 2-4.

*Owenia grata* De Vis, 1887, p. 100, pl. I-FV

Upper premolar two-rooted, about half the length of  $M^2$  and triangular (De Vis 1887, 1888). Protocone slightly smaller than parametacone. Protocone and anterior part of parametacone joined by narrow transverse loph to form short side of a right triangle. Buccal side formed by buccal crest from parametacone to anterior end of the

tooth. Third side formed by anterolingual cingulum. Small deep central basin with rugose enamel.

Upper molars large (Tables 1, 2) and bilophodont, with lophs convex forwards and somewhat tumid with incipient midlink development — postproto-crista posteromedially from protocone and pre-metacrista(?) extending anteromedially from metacone. Midlink development virtually absent in  $M^2$  but increases slowly to its greatest extent in  $M^3$  where pre- and post-cristae are confluent for a few millimetres vertically.  $M^{2-4}$  subrectangular;  $M^2$  trapezoidal, with metaloph about three-quarters width of protoloph. In  $M^3$  and  $M^4$ , metaloph forms distinct dog-leg bend where midlink joins it. Anterior cingulum extends full width of tooth, but is longer at its lingual end. Posterior cingulum narrow, particularly on  $M^2$  where small pocket may be formed by weak postmetacrista. Only trace of a lingual cingulum may be seen, at bottom of transverse valley. Buccal cingulum better developed, across mouth of transverse valley.

Lower molars more rectangularly elongate than uppers. Both protolophid and hypolophid are oblique and concave anteriorly. Protoconid end of protolophid enlarged by development of preproto-cristid extending anteromedially. Similarly, hypoconid end of hypolophid is enlarged by cristid obliqua which forms posterior half of weak mid-

TABLE 1. *Cheek Teeth Dimensions, Euowenia grata*

Except for the premolar, measurements are made in planes parallel to and normal to the lingual edge of the tooth.

	SAM P14506		QM F519 (epoxy cast)			SAM P14506	
	LM <sub>1</sub>	LP <sup>1</sup>	LM <sup>2</sup>	LM <sup>3</sup>	LM <sup>4</sup>	LM <sup>2</sup>	LM <sup>3</sup>
A-p length	—	15.0	26.5	32.6	36.2	35.7	34.8
Ant. Diam.	19.3	—	20.1	26.2	30.3	28.7	27.7
Post. Diam.	—	15.7	21.2	25.9	28.4	23.2	23.1

TABLE 2. *Euowenia grata Dimensions as given by De Vis (1887)*

These are not directly comparable with those to Table 1, as  $M^2$  for example is apparently measured along the outer edge.

	P <sub>1</sub>	M <sub>1</sub>	P <sup>1</sup>	M <sup>1</sup>
Length	14.5	34.5	15.0	38.0
Max. Breadth	8.5	22.0	14.5	29.5

Fig. 2. *Euowenia grata* De Vis. Left upper molar  $M^3$  of SAM P14506. Stereopair photographs: a) Occlusal; b) buccal; c) lingual view. Scale = 1 cm.

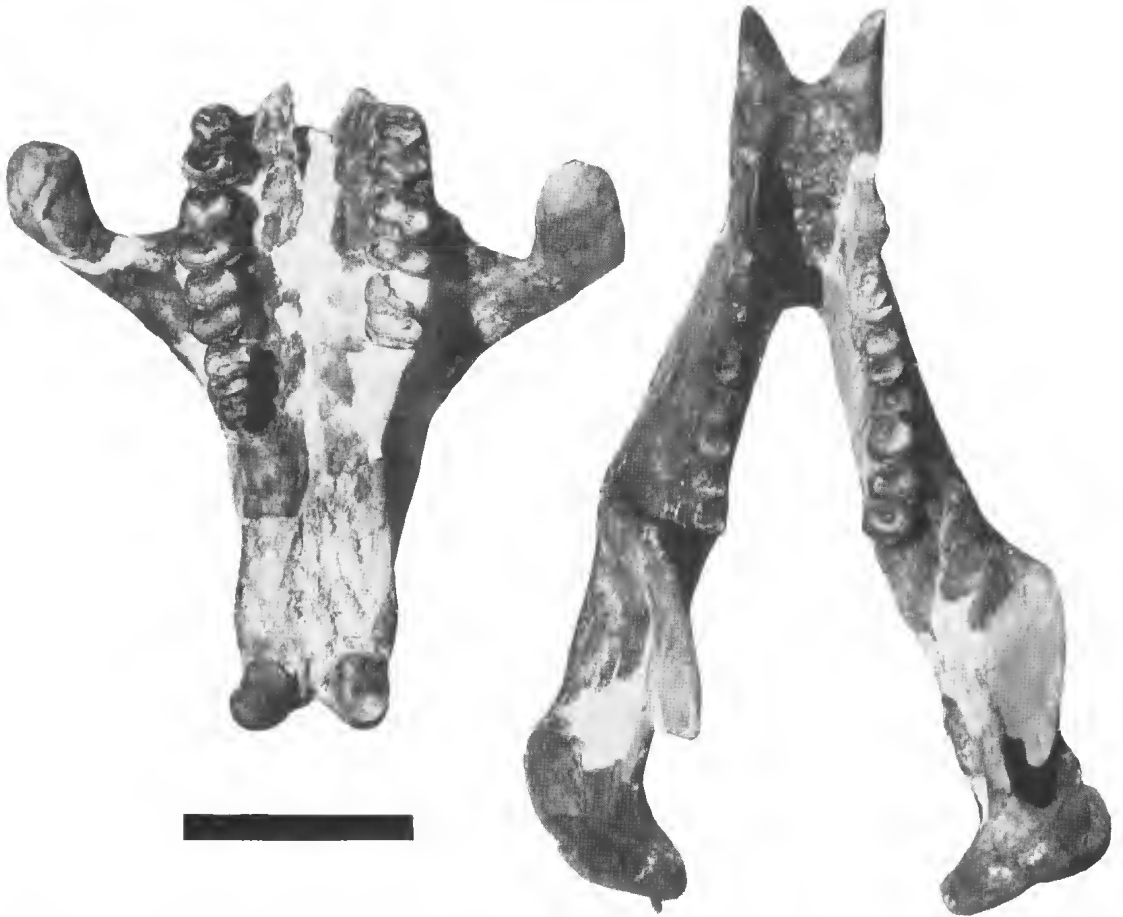


FIG. 3. *Euowenia grata* De Vis. Holotype palate and dentaries, QM F519. Scale bar = 10 cm.

link. In the holotype, lowest part of midlink is intact in last molar (De Vis 1887). Anterior cingulum almost full width of tooth. Postcingulum divided unequally into two parts at its highest point by fine submedian posthypocristid.

#### Comparison with other species

The Talyawalka specimen may be compared with this (Table 1) and other diprotodontoids.

The upper molar  $M^3$  is the same size as that of the holotype of *Euowenia grata*, and same order of size as *Meniscolophus mawsoni*. It is smaller than *Zygomaturus trilobus* and slightly more than half the length of *Diprotodon optatum*.

The Talyawalka tooth differs from *Diprotodon* (SAM P23406, Lake Callabonna) in: its much smaller size, relatively higher crown, more convex protoloph, slightly narrower precingulum with greater development at the lingual end, a buccal cingulum across the end of the transverse valley, a narrow but strongly developed postcingulum, the

absence of cementum, and particularly the presence of a Y-shaped hypoloph formed by a distinct premetacrista.

It differs from *Zygomaturus* (SAM P29889, Naracoorte) in: its smaller size (about three-quarters the length), shorter precingulum, absolutely higher lochs, thicker lochs, presence of a distinct buccal cingulum across the transverse valley, deeper and more acute transverse valley, distinct premetacrista, more distinct postmetaloph-pocket, and presence of rugose/punctate enamel.

It differs from *Nototherium mitchelli* (cast of BMNH M5002) in: its smaller size, its longer and better developed precingulum, presence of a buccal cingulum across the transverse valley, relatively higher lochs, presence of a premetacrista, and better developed postcingulum.

It differs from *Meniscolophus* (SAM P13647, of which  $M^5$  is unknown) in slightly smaller size, higher lochs, presence of distinct premetacrista, and narrow postcingulum.



Fig. 4. *Euowenia grata* De Vis. Cast of left upper maxillary tooth row of holotype, QM F519.

It differs from the holotype of *Euowenia grata* (cast of QM F519) in: having a distinct buccal cingulum with two small (one twice as big as the other) cusps across the transverse valley, and a more distinct postmetaloph-pocket.

It differs from *Palorchestes azael* (QM F773, *sic* De Vis 1895) in: its larger size, relatively greater length, lack of a forelink, presence of a strong buccal cingulum across the transverse valley, strong postcingulum, and absence of a complete midlink.

The new specimens (SAM P14506) agree closely with the holotype, considering the difference in degree of wear and preservation. In  $M^3$ , the enamel is just breached so that a good indication of the height and form of the tooth can be gained. The lophs are high (equal to the width of the tooth) and stout so that the transverse valley is particularly deep and narrow, a narrowness accentuated by the bend caused by the premetacrista. Together, the metaloph and premetacrista have a distinct Y-form. *Contra* De Vis (1887), I found no indication of a forelink on the upper molars of the holotype cast, but there is a slight protuberance in this position on the new specimen of  $M^3$ .

The molar enamel is notably rugose and punctate, similar to that of *Diprotodon* and *Euryzygoma* (Archer 1977). In the worn  $M_2$  fragment, the anterior cingulum is heavily abraded by interdental appression and has a small cusp developed at the anterolingual corner. The "midlink" is discontinuous and does not cross the transverse valley as an integral structure.

The incisor is too fragmentary to describe, save that it would be roughly circular in section with a diameter of at least 22 mm. Only a portion of the root is preserved and, from De Vis' description (1887), it could be either upper or lower II.

### Discussion

The teeth came from a depth of about 28 m, in a 1.5 m thick bed of coarse, yellow-brown dirty quartz sand, below sandy clay. The age is uncertain, but an early Pleistocene, or even Pliocene, age is possible, based on the absence of the species from late Pleistocene surficial deposits nearby — lunette sands dated at 25,300 years BP at Lake Menindee (Tedford 1967) and 32,000 years old at Lake Mungo (Barbetti & Allen 1972). Although speculative, this determination is supported by the Pliocene age of the holotype (Woods 1960). The specimen extends the known range of the taxon by almost 1000 km.

It seems that the bore drill struck a more-or-less complete skull and jaws of *Euowenia* because all fragments appear to relate to a single individual, there being no duplication of elements.

### Conclusions

These fossil teeth, recovered from a water bore on the Talyawalka Anabranch, east of Menindee, N.S.W., match those of *Euowenia grata* (De Vis) and, because they are less worn than the holotype, add to the knowledge of the species. The occurrence extends the known range of the species.

### Acknowledgments

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